IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Robert P. Hammer *et al.*

Serial No. 10/666,095

Filing Date: September 18, 2003

For: Anti-Fibril Peptides (File Hammer 0212.1)

Group 1654

Examiner Russel, Jeffrey E.

Confirmation No. 6953

DECLARATION OF ROBERT P. HAMMER

I, Robert P. Hammer, declare as follows:

1.

I am a Professor in the Department of Chemistry at Louisiana State University in Baton Rouge, Louisiana. I am one of the co-inventors of the above-captioned patent application. I make this Declaration in support of this application.

2.

It is my opinion that Yanwen Fu, Tod J. Miller, Mark L. McLaughlin, and I are the inventors, and are the only inventors, of the subject matter that is currently being claimed in this patent application. Not all co-inventors contributed to the conception of all aspects of all of the claimed inventions, however.

3.

The criteria that I understand govern inventorship under United States patent law differ from the criteria commonly used to name authors on scholarly publications such as peer-reviewed papers, PhD dissertations, and presentations made at a meeting of a scientific society. Thus there should be no surprise that the named authors on such works may differ from the named inventors in a related patent application. I understand that

inventorship under United States patent law is determined by conception of the claimed inventions, whether sole or joint.

4.

The inventive contributions of the four currently-named co-inventors included at least the following:

Dr. McLaughlin and I jointly conceived the idea of inhibiting oligomerization of β-sheet structures, including those implicated in amyloid diseases, by the use of extended peptide structures that have only one edge available for hydrogen bonding. Dr. McLaughlin and I jointly conceived the idea that such β-sheet blockers would inhibit self-assembly of amyloidogenic proteins, thus reducing amyloid toxicity.

Dr. McLaughlin and I jointly conceived the structure and sequences of the AMY-1 and AMY-2 peptides. Dr. McLaughlin and I jointly conceived the generic structures described, for example, in Claims 1 and 51-53.

Dr. Miller conceived the synthesis of the unnatural amino acid dibenzylglycine, which is one of the components of the AMY-1 and AMY-2 peptides.

Dr. Fu and I jointly conceived the synthesis of the AMY-1 and AMY-2 peptides from their component amino acids, including the non-standard amino acids.

5.

I understand that Claims 1, 7, 8, 20, 21, 51-53, and 55 are currently under rejection. I understand that the remaining Claims have either been canceled, or have been found to be allowable in substance. I have reviewed the pending Claims with the amendments that I understand will be submitted to the Patent and Trademark Office contemporaneously with the present Declaration. Based on the inventive contributions described above, it is my opinion that Mark McLaughlin, and I, Robert Hammer, are the inventors, and are the only

inventors, of the each of the amended claims that is currently under rejection, i.e., each of Claims 1, 7, 8, 20, 21, 51-53, and 55. The other inventors contributed to the conception of other Claims, i.e., to pending Claims that are not currently under rejection, or to Claims that have been canceled.

6.

I understand that among the references that have been cited against the present application are **(a)** Y. Fu *et al.*, "Efficient Acylation of the *N*-terminus of highly hindered $C^{\alpha,\alpha}$-disubstituted amino acid symmetrical anhydrides," *Organic Letters*, vol. 4, pp. 237-240 (2002) (the "*Organic Letters* paper"); **(b)** Y. Fu, *Artificial Peptides Containing $C^{\alpha,\alpha}$-Disubstituted Amino Acids: Synthesis, Conformational Studies, and Application as β-Strand Mimics,* PhD Dissertation (Louisiana State University, Baton Rouge, 2002) (the "Dissertation"); and **(c)** J. Aucoin, "Dissection of an Amyloid Aggregation Inhibitor," presentation at 225th American Chemical Society conference (March 23-27, 2003) (the "Aucoin Presentation").

7.

(a) The bottom of the first page of the *Organic Letters* paper states "Published on Web 12/22/2001." I have no reason to doubt the accuracy of this statement. I have no reason to believe that this paper had been published prior to December 22, 2001. I note that this date was less than one year prior to the September 19, 2002 filing date of provisional priority application 60/412,081. It is my understanding that this paper was cited by the Office due to its disclosure of the peptide AMY-1 (SEQ. ID NO. 4) on page 239, col. 1.

(b) Dr. McLaughlin and I jointly conceived the idea that β-sheet blockers could be used to inhibit self-assembly of amyloidogenic proteins, thus reducing amyloid toxicity. Dr. McLaughlin and I then jointly conceived the structure of the AMY-1 peptide. Dr. Miller conceived the synthesis of the unnatural amino acid dibenzylglycine, which is one of the components of the AMY-1 peptide. Dr. Fu and I jointly conceived the synthesis of the AMY-1 peptide from its component amino acids, including the non-standard amino acids. Therefore, it is my opinion that the inventors of the peptide AMY-1 are Dr. McLaughlin, Dr. Fu, Dr. Miller, and me.

(c) Because the emphasis of the *Organic Letters* paper was on the synthesis of the peptide AMY-1 from its amino acid components, only Dr. Fu and I were named as co-authors of that paper. Because Dr. McLaughlin and Dr. Miller did not directly contribute to the peptide coupling protocols that are the focus of the *Organic Letters* paper, they were not named as co-authors on that paper. Nevertheless, in my opinion Dr. McLaughlin and Dr. Miller are co-inventors of the AMY-1 peptide, along with Dr. Fu and me, for the reasons given above.

(d) To the extent that the *Organic Letters* paper may reflect the conception of any of the inventions of Claims 1, 7, 8, 20, 21, 51-53, and 55, beyond the peptide AMY-1 itself, then my co-author on the *Organic Letters* paper, Dr. Fu, learned of those aspects of the claimed inventions from me or from my co-inventor on those Claims, Dr. McLaughlin, and to that extent the *Organic Letters* paper represents a publication (direct or indirect) of the inventors' own work.

8.

(a) The title page of the Dissertation shows that it was submitted in December 2002. In the ordinary course of such matters, the Dissertation would normally have become publicly available some weeks or months later, although I have not confirmed the exact date when it became publicly available. I was the author's graduate research adviser (see page ii of the Dissertation, first paragraph). As the author's graduate research adviser, I can state with confidence that the Dissertation was not publicly available before December 2002. I note that December 2002 was less than one year prior to the September 18, 2003 filing date of present nonprovisional application.

(b) It is my understanding that the Dissertation was cited by the Office for its disclosure concerning various points. It is in the very nature of a PhD dissertation that a Dissertation will have but a single author. The presentation of original research in a Dissertation constitutes an implied representation that the author made a significant contribution to the research reported. However, in the absence of some express statement to the contrary, the implied representation does not go so far as an assertion that no one else made any contribution to the reported research. Indeed, most modern scientific research is a collaborative effort, and few would assume that the author of a Dissertation received no assistance in conducting the work described. To the contrary, page ii of the

Dissertation, "Acknowledgments," acknowledges the collaboration and assistance of many individuals, including both people who are named as co-inventors on the present application and those who are not. Note particularly that each of the co-inventors of the present application is acknowledged on page ii. It would not be customary to name those individuals (or anyone else) as co-authors on a PhD Dissertation, however.

(c) Dr. Fu and I jointly conceived the synthesis of several peptides from their component amino acids, including non-standard amino acids. To the extent that the Dissertation describes such syntheses, the conception of those syntheses was joint by Dr. Fu and me. Dr. Fu also did most of the hands-on laboratory work in carrying out those syntheses.

(d) To the extent that the Dissertation may reflect the conception of any of the inventions of Claims 1, 7, 8, 20, 21, 51-53, and 55, beyond the syntheses of certain peptides as described, the Dissertation's author, Dr. Fu, learned of those aspects of the claimed inventions from me or from my co-inventor on those Claims Dr. McLaughlin, and to that extent the Dissertation represents a publication (direct or indirect) of the inventors' own work.

9.

(a) Although the Aucoin Presentation does not show on its face when it was presented, on information and belief these are copies of slides presented by Dr. Jed Aucoin at the 225th American Chemical Society conference, held March 23-27, 2003. I have no reason to believe that the slides were publicly displayed or otherwise publicly available prior to March 23, 2003. So far as I am aware, these slides were presented only during Dr. Aucoin's presentation, and printed copies were not distributed at the meeting. I note that the March 2003 presentation was less than one year prior to the September 18, 2003 filing date of present nonprovisional application. Abstracts for presentations at meetings of the American Chemical Society are typically distributed to attendees about one or two months before the meeting. Although I do not have the precise date for distribution of these abstracts, it would certainly have been less than one year prior to the September 18, 2003 filing date of the present nonprovisional application.

(b) It is my understanding that this presentation was cited by the Office due to its disclosure of the peptides AMY-1, AMY-2, and AMY-3 (SEQ ID NOS. 4-6, respectively).

The sequences of AMY-1, AMY-2, and AMY-3 were conceived by Dr. McLaughlin and me. The synthesis of these three peptides was conceived by Dr. Fu and me. The synthesis of the unnatural amino acid dibenzylglycine, one of the components of the AMY-1, AMY-2, and AMY-3 peptides, was conceived by Dr. Miller.

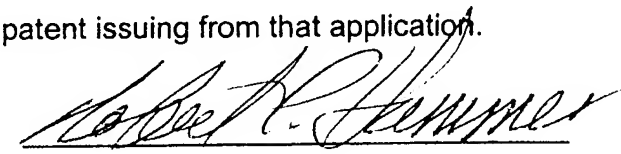
(c) Dr. Aucoin made the surprising discovery that AMY-2, for example, causes aggregation into a non-toxic, non-fibril conformation, as opposed to inhibiting all aggregation. See for example the conclusions page of the Aucoin presentation.

(d) It is customary that presentations such as this one name a single individual as the author, the speaker who is to actually give the talk. There is no implication that others did not also contribute to the work as well. Note for example the "acknowledgments" page of the presentation, naming a number of individuals, some of whom are inventors on the present application, and some of whom are not.

(e) To the extent that the presentation may reflect the conception of any of the inventions of Claims 1, 7, 8, 20, 21, 51-53, and 55, the named author, Dr. Aucoin, learned of those inventions from me or from my co-inventor on those Claims Dr. McLaughlin, and to that extent the presentation represents (directly or indirectly) the inventors' own work.

10.

All statements made in this Declaration of my own knowledge are true. All statements made in this Declaration on information and belief are believed to be true. These statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-identified patent application or any patent issuing from that application.



Robert P. Hammer

August 7, 2007

Baton Rouge, Louisiana